The Efficacy of the Grid Marketing Channel for Fed Cattle

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Abstract

Beef industry data suggest that carcass yield and quality grades have shown little improvement over the last six years. Trend analysis of grid market share and carcass quality suggests that grid pricing has not made sufficient progress in achieving the goals envisioned for it as a value based marketing system.

Key words: Grid Pricing, National Beef Quality Audit, Public Livestock Price Reporting, Beef Carcass Quality

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Introduction

"Value based marketing" generally refers to a marketing system that establishes the true market value of a product, based on product characteristics and market prices. The *de facto* value based marketing system for fed cattle is referred to as "grid pricing." The goal of grid pricing is to provide the market with a pricing mechanism that overcomes inefficiencies associated with selling cattle by the pen (live-weight or dressed-weight) at an average price per hundred cwt. The marketing method of average pricing generates pricing inefficiency that negatively affects production efficiency because above-average and below-average cattle in a pen receive the same price per cwt. Production inefficiencies include inconsistent product quality, failure to provide consumers beef products they desire, and excess fat production. Thus, average pricing distorts market signals and poses "… a barrier to the transmission of consumer preferences for a particular type of beef product to the fed cattle producer…." (Fausti, Feuz, and Wagner 1998, p.74).

The perceived need for a value based marketing system for slaughter cattle in the beef industry has its roots in the dramatic decline in beef demand from 1979 to 1998 (Purcell 1998). According to the Kansas State University Annual Choice Retail Beef Demand Index (Mintert 2007), retail beef demand declined by approximately 50% during this period with most of the decline occurring in the 1980s. The decline in retail beef demand had negative consequences for the beef industry: a) a 33% loss in market share to poultry and pork, b) dramatic decline in the national beef cow herd, and c) large numbers of producers exiting the industry (Purcell 1998).

The first publication to empirically evaluate grid pricing appeared in 1998 (Fausti, Feuz, and Wagner 1998). Subsequently, numerous research reports and journal articles have investigated the economic implications of grid pricing as an important marketing channel for fed cattle. However, as Johnson and Ward (2005, p.578) correctly point out, "Economists have conducted considerable research and created an entire body of literature on grid pricing without really addressing a central issue—the efficacy of grid pricing to accomplish its presumed objectives."

The objective of this research is to evaluate the efficacy of the grid marketing channel for fed cattle. To accomplish this goal we provide: a) a review and evaluation of the grid pricing literature, b) an assessment of current trends in beef quality, and c) an empirical investigation of the trends in beef carcass quality and grid market share of weekly slaughter.

Literature Review

The Evolution of Grid Pricing for Fed Cattle

The War on Fat, published by the National Cattlemen's Beef Association (NCBA), recommended the development of a value based marketing system to address declining beef demand resulting from production and marketing inefficiencies plaguing the industry (Value Based Marketing Task Force 1990). The U.S. beef packing industry began developing prototype grid pricing systems in the early 1990s. These prototype systems expanded carcass premiums and discounts beyond the traditional "Grade & Yield" individual carcass pricing system.[1] One example of a prototype appearing in the literature is the Excel Corporation's Muscle Scoring System (Feuz, Fausti, and Wagner 1993).

In October 1996, the USDA Agricultural Marketing Service (AMS) began publishing weekly grid premium and discount price reports: National Carcass Premiums and Discounts for Slaughter Steers and Heifers (USDA-AMS). The AMS developed an additive pricing grid based on industry standards. These reports provided the market with weekly industry averages based on information voluntarily provided by the packing industry to the AMS. The weekly survey collected information on: a) yield-grade and quality-grade premiums and discounts, b) heavy and light weight carcass discounts, and c) discounts for carcass defects, such as injection lesions, dark cutters, etc., (For additional discussion see Fausti, Feuz, and Wagner 1998). After the Livestock Mandatory Price Reporting Act went into effect in April of 2001, packers were mandated to report grid premium and discount information to the AMS.

Academic Literature

Support for the development of a value based marketing system first appeared in the animal science and meat science literature (Thonney 1990, Cross and Whittaker 1992, Cross and Savell 1994, and Smith et al. 1995). In the agricultural economics literature, Schroeder et al. (1998) reported results from a survey designed to address issues facing the beef feedlot industry, and recommended a broad research agenda on value based marketing. Johnson and Ward (2005) recently raised questions concerning the current direction of grid pricing research. Our objective is to add to their discussion on the efficacy of grid pricing and the current direction of grid pricing research.

A careful review of the grid pricing literature reveals that the primary focus of the literature has been on pricing efficiency. The standard methodology employed by researchers is to compare grid based pricing methods to determine individual carcass

value to average pricing methods at the pen level. In this literature, a common set of issues addressed are: a) average per head revenue differentials, b) average per head profit differentials, c) variability of per head revenue and profit, and d) the analysis of the role carcass characteristics play in determining carcass value.

This particular methodology was developed in a series of papers addressing transaction price efficiency in the cash market for slaughter cattle (Feuz, Fausti, and Wagner 1993, 1995; Fausti and Feuz 1995). This earlier research established that average pricing was inefficient relative to an individual carcass based pricing system, but carcass based pricing was found to be a riskier marketing alternative relative to the average pricing. These authors also concluded: a) that average pricing distorts the transmission of market signals from consumers to producers, and b) that risk aversion and incomplete information about live animal carcass quality characteristics explained the coexistence of individual and pen level carcass pricing methods.

Fausti, Feuz, and Wagner (1998) provided the first empirical evaluation of the economic implications of selling on a grid. Their discussion included a literature review outlining the linkages connecting the decline in beef demand to the introduction of grid pricing. They then provided the first analysis to appear in the literature investigating the economic incentives associated with an additive grid for slaughter cattle. Consistent with their earlier work, they found grid pricing to be a riskier marketing alternative to average pricing if producers are uncertain about the quality of the cattle they are sending to market. They concluded that this additional risk may pose a barrier to widespread adoption of grid pricing in the cattle feeding industry.

A brief overview of the grid pricing literature is provided in Table 1. A number of common threads appear in this literature concerning the attributes associated with the grid pricing marketing alternative. All of the studies focus on price efficiency. A majority of these studies compare a grid to an average pricing alternative. The general consensus is that selling cattle of a grid does increase price efficiency, but also increases profit (revenue) variability relative to the average pricing alternative. Grid pricing mechanisms appear to have a discount bias, and premiums only have a significant positive effect on profit when cattle are of high quality. In studies with multiple grid comparisons or time series data, pricing signals vary across grids and over time. This variability appears to be due to a host of factors, e.g.: a) premium and discount structure that varies according to whether the grid rewards quality or yield grade attributes, b) grid base price selection, c) seasonality, and d) market conditions at the plant level.

Table 1: Summary of Grid Pricing Literature

Attributes of interest Authors of fed - cattle grid pricing literature	Obs. unit Pen or individual animal	Number of grids	Cross sectional or pooled time series data analysis	Marketing channels compared	Number of pens / head	Date of grid pricing data	Variables of interest
Fausti et al. 1998	Individual	one	Cross sectional	Grid vs. dressed weight	2 / 3000	April 1997	Per head avg revenue and revenue variability
Feuz 1999	Individual	three	Pooled cross sectional, six marketing dates	Multi grid comparison	85 / 5,520	Dec 1996 to Feb 1998	Grid premium or discount per cwt. / carcass attributes
Schroeder and Graff 2000	Pen	one	Time series	Grid vs. dressed vs. live	71 / 11,703	Weekly 1997	Per head avg revenue and revenue variability
Anderson and Zeuli 2001	Pen	one	Time series	Grid vs. live	6 / 500	Oct 1996 to May 2001	Per head avg revenue and revenue variability
Fausti and Qasmi 2002	Pen	one	Time series	Grid vs. dressed weight	2/ 3000	Jan 1997 to Dec 2000	Average per head price differential (grid – dressed weight); seasonality and trend
McDonald and Schroeder 2003	Pen	two	Pooled cross sectional	Multi grid comparison	4,494 pens	1992-1998	Carcass attributes, production cost effect on profit per head
Johnson and Ward 2005	Individual	one	Cross sectional	None	18,267 head	Single weekly grid based on two year average for premiums and discounts 1996-1998	Per head grid revenue, carcass attributes affecting revenue variability
Johnson and Ward 2006	Individual	one	Cross sectional	Comparing high quality vs. low quality cattle on single grid	18,267 head	Single weekly grid based on two year average for premiums and discounts 1996-1998	Per head grid revenue, carcass attributes affecting revenue variability

Grid Market Share

It is our view that the efficacy issue discussed in the grid pricing literature refers to whether the grid pricing marketing channel is achieving the goals envisioned for it as a value based marketing system for slaughter cattle. The general consensus in the literature is that the goals are: a) wide-spread adoption, b) improved product quality, c) improved product consistency, and d) increased production efficiency, e.g. less fat production.

The views expressed in the grid pricing literature on progress made toward achieving wide-spread adoption are mixed. Several studies evaluating grid pricing versus average pricing suggest an increase in price variability and a bias toward discounts when selling cattle on a grid may act as a "barrier to adoption" for many producers (Fausti et al. 1998, Feuz 1999, Anderson and Zeuli 2001, Fausti and Qasmi 2002). Other researchers conclude that grid pricing is gaining market share and providing the proper incentives to meet the goals of a value based marketing system for the cattle industry (Schroeder et al. 2002, McDonald and Schroeder 2003).

Schroeder et al. (2002) conducted a regional (Iowa, Nebraska, Kansas, Texas) feedlot survey. Their survey results indicated that 16% of cattle marketed by these feedlots were sold on a grid in 1996 and 45% in 2001. They reported that grid market sales by these feedlots would increase to 62% by 2006. Cattle-Fax®, a private beef consulting firm, estimates that grid pricing currently accounts for 50% of total slaughter of finished cattle (Cattle-Fax/Grid-Max website, Aug 2007). Both academic and private industry publications have cited these statistics as indicators of a rapid increase in grid market share of total fed cattle slaughter, e.g., Gelbvieh World (2004) and Smith (2005).

Cited empirical estimates provided by both academic and industry sources suggest that grid pricing has gained market share of total slaughter over the last ten years and will become the dominant marketing mechanism for fed cattle in the near future. The positive trend in market share implies that pricing inefficiency in the fed cattle market should be declining and the industry should be experiencing an increase in average carcass quality.

Beef Carcass Quality

Findings from the 2005 National Beef Quality Audit (NCBA 2006), based on industry survey response, report that the percentage of cattle grading prime or choice has increased from 58.7% in 1995 to 68.2% in 2004. But the audit also recognized that the industry is still struggling with the same quality and marketing issues that plagued the industry in the 1980s (Value Based Marketing Task Force 1990). The 2005 NBQA also raised concerns regarding: a) excess fat production, b) inconsistent meat quality, c) the need for clearer market signals, and d) inconsistent carcass quality (Harpster 2007).

Included in the NBQA report are USDA estimates for carcass quality. The USDA estimated the percentage of cattle grading either prime or choice at 60.5% in 2004, almost 8% less than the NBQA estimate (NCBA 2006). USDA also reported an increase in Yield-Grade 4&5 carcasses, from 7.6% in 1995 to 13.1% in 2004 (NCBA 2006). Recent independent research also raises questions about the trend in beef quality. In a published study released by Certified Angus Beef ™, Corah and McCully (2006) reported that the percentage of heifers and steers grading prime or choice declined from 58% to 54% and 48% to 44%, respectively. Their findings are based on data collected from 1999 to 2005 on approximately 19.8 million carcasses.

The apparent lack of improvement in overall carcass quality of fed cattle while the industry claims that grid market share of total slaughter has been increasing over the last decade is a conundrum. This puzzle is at the heart of the efficacy issue raised by Johnson and Ward (2005).

Data

Marketing Channel Options for Fed Cattle

To understand the role of grid pricing in the market for fed cattle, it is necessary to discuss the marketing channel alternatives for finished cattle. Fed cattle producers can sell fed cattle in the spot (cash) market or on contract for future delivery. The spot market alternatives are auction sales and direct sales to packers. Direct sales are often referred to as negotiated sales. The contract market alternatives are: a) forward contracts and b) marketing or supply agreements which are often referred to as formula pricing. Procurement volume across these alternatives varies over time. Ward (2005) reported that over a three-year period (2001-2003) negotiated sales accounted for 46.1% of annual average total slaughter volume and formula pricing accounted for 43.3%. Packer ownership, forward contracts, and auction sales accounted for the residual of procurement volume. We shall refer to the combination of formula and forward contract procurement of fed cattle as purchases in the *contract market* and negotiated transactions as purchases in the *spot market*. The AMS defines a grid transaction as a negotiated sale within a 14 day delivery window and so it is considered a spot market transaction.

The passage of the Livestock Mandatory Price Reporting Act in 1999 provided a wealth of data on contract sales (Diersen 2004). In 2004, the AMS began to publish

weekly grid slaughter volume data for fed cattle. These new data sources will enable us to analyze the trend in grid market share over time for fed slaughter steers.

AMS Carcass Quality Data

To analyze the trend in carcass quality we selected the National Steer & Heifer Estimated Grading Percent Report (NW_LS196) published weekly by the USDA-AMS. We selected Region 7&8 to examine because it is a part of the country that produces a significant amount of high quality cattle. This regional report provides information on the breakdown of quality and yield grade percentages for cattle slaughter in CO, IA, KS, MO, MT, NE, ND, SD, UT, and WY. We calculated the weekly percentage of carcasses that yield-graded less than 4 and had a quality grade of at least choice. This statistic provides a weekly estimate of cattle slaughtered that will not receive a yield or quality grade discount on a typical pricing grid. Data were collected from January 1997 through June 2007 for a total of 544 weekly observations.

AMS Slaughter Steer Volume and Grid Market Volume Data

The introduction of livestock mandatory price reporting regulations has enabled the AMS to provide weekly reports on the volume of cattle slaughtered in the contract and spot markets as well as the volume of cattle slaughtered on a negotiated grid. The AMS began providing this detailed information on April 11, 2004, and weekly data from this point in time until May 2007 were collected (161 weekly observations). We decided to focus our analysis on the slaughter steer market to eliminate discussion of differences across slaughter cattle categories.

After discussions with AMS market reporters assigned to the St. Joseph, Missouri office, we concluded that a reasonable estimate of weekly grid market share of steer

slaughter volume can be gleaned from AMS livestock market reports LM_CT154 and LM_CT151. An outline of our approach for estimating grid market share is provided in detail below.

A. Public Reporting of Grid Transactions

The AMS refers to "negotiated grid" transactions as those for which the base price is negotiated between the producer and the packer for delivery within 14 days. Packers report the base price and other relevant transaction information as soon as the transaction is agreed upon. The AMS reports this information in the weekly LM_CT154 report. Once the cattle are delivered to the packer, slaughtered, and the final net price determined (reflecting premiums and discounts), the transaction is again reported to the AMS and published in the weekly LM_CT151 report. All grid transactions are reported twice, first as "negotiated grid base prices" in the weekly LM_CT154 and then in the weekly LM_CT151 as "negotiated grid net." Given that grid transactions are first reported in the weekly LM_CT154 and take up to two weeks to show up in the weekly LM_CT151 when the cattle are slaughtered, the weekly LM_CT151 provides the most accurate estimate for grid slaughter volume for any given week. Total weekly grid slaughter volume is estimated by adding up the "negotiated grid net" categories for live and dressed weight based grid transactions.

B. Deriving Weekly Spot Market Steer Slaughter Volume Data

Spot market slaughter steer volume is estimated by summing data from the "Domestic Negotiated Cash Prices" section of the AMS weekly LM_CT154 report for the following steer categories: a) Live FOB, b) Live Delivered, c) Dressed Delivered, and d) Dressed FOB.

C. Deriving Weekly Contract Market Steer Slaughter Volume Data

Slaughter steer volume in the contract market is estimated using the AMS LM_CT151 weekly report. Slaughter reported in the LM_CT151 reflects the volume associated with delivery, slaughter, and final price per cwt. received for contract and formula purchases of steers. Total volume is estimated by adding together weekly steer volume for: a) formula net (live and dressed basis), and b) forward contract net (live and dressed basis). Summing categories "a" and "b" provides an estimate for total weekly steer slaughter volume for the contract market.

D. Total Weekly Steer Slaughter Volume

Adding total weekly contract slaughter volume to spot market slaughter volume, and to "negotiated grid net" volume provides an estimate of total weekly steer slaughter volume as reported by the AMS. Dividing "negotiated grid net" volume reported in the LM_CT151 by total steer slaughter volume provides an estimate for the proportion of weekly steer slaughter volume sold on a grid.

The response from the AMS on this approach for estimating the weekly percentage of slaughter volume for negotiated grid transactions is that this would be the most accurate method for estimating this statistic. One caveat, a result of how the AMS defines grid transactions, is that it is possible that a formula or forward contract transaction may have some type of value based component for determining individual carcass value but such a transaction will only be reported as a formula or forward contract transaction because the base price is established at the time of delivery. However, formula and forward contract specifications for value based incentives can be either at the carcass level or the pen level. Furthermore, the contract pricing mechanism

may be simply an average price per cwt., live or dressed weight, or set in the futures market or the spot market as an adjusted price for local market conditions. At this time it is not possible to disaggregate contract market transactions into pricing at the pen level versus pricing at the individual carcass level.

Methodology

Time Series Trend Analysis of AMS Slaughter Cattle Data

Time series regression techniques were applied to regional carcass quality data, and data on grid market share of weekly slaughter volume for slaughter steers to test for the presence of a trend. According to Newbold (1995), the behavior of a time series variable can be broken down conceptually into four categories: a) trend, b) seasonal, c) cyclical, and d) irregular.

The additive model is a common approach used to model time series components of a random variable over time. Assume X is a random variable, and let X_t denote the value of the series at time t:

1) $X_t = T_t + S_t + C_t + I_t$.

A. The Additive Model and Data Diagnostics Procedures

The empirical analysis focused on detecting a trend in the grid market share and carcass quality data.[2] Standard econometric procedures were applied to the grid and carcass quality data to remove the deterministic seasonality component.[3] The grid data and carcass quality data sets were then examined for a unit root using the Phillips-Perron test (Phillips and Ouliaris 1990) and the existence of a unit root was rejected at the one percent level. The additive regression model is defined as,

2) $X_t = a + b_1 Trend_t + b_2 Trend^2_t + e_t$,

where X is the dependent variable, t denotes time in weeks, Trend and $Trend^2$ denote the weekly trend and trend squared explanatory variables. The quadratic trend model was selected based upon the evaluation of time series plots of the two data series. The variable $e_t \sim N(0,\sigma^2)$ denotes the random error term.[4]

Empirical Results

Summary Statistics

Total weekly steer slaughter volume was divided into the following categories: a) negotiated live and dressed weight spot market volume, b) net formula pricing volume, c) net forward contract volume, and d) net negotiated grid volume. These categories were then divided by total weekly slaughter volume to derive the proportional contribution to total weekly steer slaughter volume (161 observations). Also included in Table 2 are the summary statistics for the percentage of carcasses not subject to yield or quality grade discounts derived from the weekly AMS report for cattle slaughtered in Region 7&8 (544 observations). It should be noted that packer owned cattle are not included in the data.

Table 2: Summary Statistics: Weekly AMS Estimates

Variable	Obs	Mean	Std Dev	Min	Max	Coefficient Of Variation
Tot Steer Volume	161	216, 417 (# of head)	34, 411	136, 134	295, 060	15.7%
Neg Cash Volume	161	108, 632 (# of head)	25, 981	51, 445	172, 345	23.8%
Formula Volume	161	77, 681 (# of head)	12, 747	48, 313	112, 795	16.3%
Forward C. Volume	161	10, 603 (# of head)	6, 267	2, 692	39, 855	58.4%
Neg Grid Volume	161	19, 501 (# of head)	4, 986	9, 292	33, 110	25.5%
Neg Cash % Share	161	49.71 (% of Slaughter)	6.21	34.54	68.07	12.5%
Formula % Share	161	36.25 (% of Slaughter)	5.23	23.85	48.91	14.4%
Forward C. % Share	161	4.89 (% of Slaughter)	2.79	1.43	20.22	57%
Neg Grid % Share	161	9.14 (% of Slaughter)	2.43	4.80	17.22	26.6%
Region 7&8 At least choice Less than YG4	544	48.71 (% of Vol. graded)	4.19	36.90	60.24	8.6%

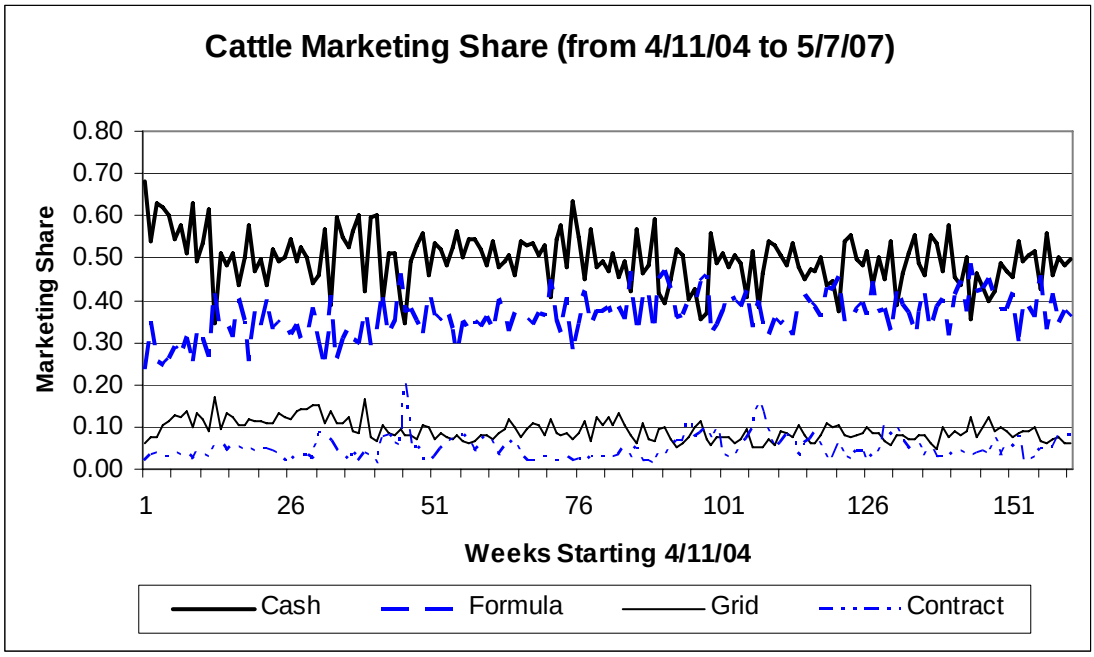
Table 2 provides insight on the recent marketing pattern for slaughter steers over the last three years (2004-2007). The dominant marketing channel (on average) during this time period is the negotiated cash market (live- and dressed-weight pricing). Average pricing is the preferred producer marketing alternative for approximately 50% of total weekly steer slaughter volume. The summary statistics also indicate that grid market share ranges from 4.8% to 17.2%, with a mean just over 9%. The summary statistics suggest that negotiated grid market share of steer slaughter is relatively low and exhibits relatively high variability. The relatively small share of slaughter attributed to negotiated grid transactions revealed in the AMS data raises questions about the accuracy of past

industry survey results suggesting that grid pricing has become a dominant marketing channel for cattle and that its dominance will grow in the future.

Another interesting fact revealed in Table 2 is that the relative variability of slaughter volume across the marketing alternatives varies. The Coefficient of Variation estimates indicate that while formula pricing has relatively less variability in weekly slaughter volume than the cash market, the cash market has less variability in its share of weekly slaughter volume. This implies that the weekly market share of steers slaughtered at an average price has been relatively more stable, as a proportion of total slaughter, over time.

Figure 1 provides a time series plot of the weekly steer slaughter share for the cash, grid, formula, and forward contract marketing channels. While the market share of steer slaughter volume sold in the cash market is relatively more stable, Figure 1 suggests that it has been losing market share to formula pricing. Furthermore, forward contract share of slaughter volume has been flat, and grid market share has been declining.

Figure 1



Trend Analysis

Initial regression analysis used an ordinary least squares procedure. A test for serial correlation was conducted using the Durbin-Watson procedure. Serial correlation was detected and a Maximum Likelihood autoregressive error correction modeling procedure was selected to correct this problem (SAS 2003). Trend analysis results for carcass quality and grid market share are provided in Tables 3 and 4.

A. Carcass Quality

Table 3: Regression Results for Carcass Quality: 1997 to 2007

SSE: 856	Regression R^2 : 0.1036		DFE: 538		AIC: 1803
MSE: 1.59	Total R^2 : 0.8960		Root MSE: 1.26		SBC: 1829
Variable	DF	Parameter Estimate	Standard Error	T-Value	P-Value
Intercept	1	0.6079	1.1414	0.53	0.59
Time-trend	1	0.0265	0.00965	2.75	0.006
Time-trend Squared	1	-0.000078	0.000017	-4.55	0.001
AR1	1	-0.4681	0.0416	-11.26	0.001
AR2	1	-0.1700	0.0436	-3.90	0.001
AR4	1	-0.2350	0.0382	-6.16	0.001

The regression results reveal that there is a statistically significant nonlinear trend. Taking the first derivative of the estimated regression equation with respect to the time-trend variable and setting it to zero indicates that the percentage of cattle slaughtered in Region 7&8 that did not receive a quality or yield grade discount was increasing from 1997 to until mid 2000 and then began to decline. This result is consistent with the literature cited earlier on the apparent decline in beef carcass quality in recent years.

B. Grid Market Share

Regression results in Table 4 indicate that there is a statistically significant nonlinear trend in the data. Regression results indicate that grid market share has been declining but at a decreasing rate. The implication of our findings suggest that the negotiated grid marketing alternative lacks the momentum necessary to gain significant market share in the future. Given the empirical evidence, it does not appear that the

negotiated grid marketing channel will become a dominant marketing channel for slaughter steers.

Table 4: Regression Results for Grid Market Share: 2004 to 2007

SSE: 523	Regression R^2 : 0.2874	DFE: 156	AIC: 657		
MSE: 3.35	Total R^2 : 0.3413	Root MSE: 1.83	SBC: 672		
Variable	DF	Parameter Estimate	Standard Error	T-Value	P-Value
Intercept	1	3.26	0.47	6.94	0.001
Time-trend	1	-0.0767	0.0134	-5.72	0.001
Time-trend Squared	1	0.000338	0.0000802	4.21	0.001
AR1	1	-0.1904	0.0777	-2.45	0.015
AR12	1	0.165	0.0785	2.10	0.037

Summary and Research Recommendations

We provide an extensive overview of the grid pricing literature, current issues surrounding the quality of beef produced, and industry expectations for the role grid pricing plays as a value based marketing system toward improving beef carcass quality over time. Trend analysis of carcass quality and grid market share indicates a lack of positive progress in recent years. The grid market share analysis is based on data previously not available to the public.

Our synthesis of the industry and academic literature indicates that there is a commonly held view that grid pricing has or will become the dominant marketing channel for fed cattle in the near future. The beef industry expectation is that beef carcass quality will improve as grid market share increases. Recent empirical evidence provided by industry and government sources, however, indicates that beef carcass yield and quality grades have shown little improvement over the last five or six years. Our trend

analysis of carcass quality in Region 7&8 is consistent with this literature. This apparent contradiction of the industry's view that grid pricing has captured a substantial share of fed cattle slaughter while beef quality has stagnated supports Johnson and Ward's questioning the efficacy of grid pricing as a value based marketing system.

Empirical evidence indicates that approximately 10% of total weekly steer slaughter, on average, is marketed on a grid as reported by the AMS. This finding suggests that the industry view of grid market share is overstated. However, even if half of contract volume (20%) reported in Table 2 was sold on a grid during the last three years, this implies that only about 30% of weekly steer slaughter volume, on average, was marketed on an individual carcass quality based pricing system. Furthermore, grid and contract market share of weekly steer slaughter volume exhibits greater relative variability than average pricing. Greater relative variability indicates instability in the flow of information to producers and reduces the ability of the grid pricing mechanism to provide consistent information to fed cattle producers over time.

It is our view that the introduction of grid pricing as a marketing alternative has struggled to achieve the objectives of a value based marketing system because producers have resisted widespread adoption. We believe that research efforts need to focus on why producers are not willing to market on a grid. There is a need to identify barriers to producer adoption of grid pricing before potential modifications to the grid pricing system can be proposed.

Footnotes

1. The Grade & Yield pricing system determined carcass value based on dressed weight and the system discounted carcasses that did not achieve quality-grade choice or a yield-grade of less than 4. The carcass price per cwt. is determined using an additive process.

2. The variability of the time series cyclical and irregular components will be accounted for in the regression residuals. Preliminary analysis did find a statistically significant seasonality component in the carcass and grid data sets. However, since the focus of the empirical analysis is on trend analysis, and incorporating discussion and tables on the seasonality issue would have greatly lengthened the manuscript, we decided to address the seasonality issue in a forthcoming paper.

3. The seasonal component was removed from the grid market share and carcass quality data by regressing the variables of interest on monthly seasonal dummy variables. The regression residuals embody the deseasonalized data.

4. It is not our intent to explain the variability in grid market share or carcass quality in this paper.

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